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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/615,673 | 07/08/2003 | Jeffrey W. Moe | 104874-142119 | 9826 |

24964 7590 03/20/2009

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| EXAMINER | |
|---|---|
| DINH, TIEN QUANG | |
| ART UNIT | PAPER NUMBER |
| 3644 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 03/20/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* JEFFREY W. MOE, JOHN J. WUNSCH, and
MICHAEL S. SPERLING

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Appeal 2008-3036
Application 10/615,673
Technology Center 3600

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Decided:[1] March 20, 2009

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*Before:* JENNIFER D. BAHR, MICHAEL W. O'NEILL, and FRED A. SILVERBERG, *Administrative Patent Judges.*

BAHR, *Administrative Patent Judge.*

DECISION ON APPEAL

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## STATEMENT OF THE CASE

Jeffrey W. Moe et al. (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-13 and 16, which are the only claims pending in the application. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

### *The Invention*

Appellants' claimed invention is directed to a method and apparatus for reducing noise generated by the fan section of an aircraft engine and concurrently employing a low power electrical ice protection system to minimize ice formation on the nacelle inlet and remove any ice formed on the nacelle inlet. Specification, para. [0001].

Claims 1 and 16 are the only independent claims involved in this appeal. Claim 1, reproduced below, is representative of the claimed subject matter.

> 1. An acoustic panel for use in the inlet lip portion of a gas turbine nacelle, the panel comprising: (a) a solid back skin; (b) an acoustically permeable front skin; (c) a honeycomb cell structure located between the front skin and back skin; and (d) an ice protection system affixed to the front skin, wherein the ice protection system includes an acoustically permeable and electrically and thermally conductive structure which includes means for connection to an electric power source, and the structure is thermally insulated from the front skin.

*The Rejections*

The Examiner relies upon the following as evidence of unpatentability:

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| Dean | US 3,800,121 | Mar. 26, 1974 |
| Mnich | US 5,653,836 | Aug. 5, 1997 |
| Volkner | US 4,036,457 | Jul. 19, 1977 |
| Hom | US 4,291,079 | Sep. 22, 1981 |
| Kugelman | US 4,514,619 | Apr. 30, 1985 |

Appellants seek review of the Examiner's rejections under 35 U.S.C. § 103(a) of claims 1-9 and 16 as being unpatentable over either Hom or Mnich in combination with Dean and claims 10-13 as being unpatentable over either Hom or Mnich in combination with Dean and either Kugelman or Volkner.

## SUMMARY OF DECISION

We REVERSE.

## ISSUE

The dispositive issue presented in this appeal is whether Appellants have demonstrated the Examiner erred in determining it would have been obvious to combine the electrical heating apparatus of Dean with the sound attenuation structure of Hom or Mnich in a manner to arrive at the subject matter of Appellants' independent claims 1 and 16.

## DISCUSSION

Each of Appellants' independent claims 1 and 16 requires an acoustic panel comprising a solid back skin, an acoustically permeable front skin, a

honeycomb structure between the front skin and back skin, and an ice protection system affixed to, or located on, the front skin.

Hom and Mnich each teach sound attenuation panels comprising an imperforate back facing sheet, a thin perforated sheet, a honeycomb core disposed between the imperforate facing sheet and the perforated sheet, and a thin porous material or cloth over the perforated sheet. Hom, col. 2, ll. 40-53; Mnich, col. 2, ll. 46-63. Hom emphasizes the importance of providing continuous communication between the honeycomb core cells and the atmosphere adjacent to the noise to be attenuated. Hom, col. 1, ll. 15-17. The panel structures disclosed by Mnich and Hom operate "utilizing the Helmholtz resonance principle, wherein a first imperforate sheet of material is bonded to one core surface of a sheet of cellular core material and a thin perforate sheet of like material is applied to the opposite core surface." Hom, col. 1, ll. 26-30. Any significant blocking of the perforations increases the desired flow resistance between the source of the sound to be attenuated and the cells of the core, and is thus undesirable. Hom, col. 1, ll. 53-55. Neither Hom nor Mnich discloses an ice protection system affixed to or located on the perforated sheet or porous material or cloth, as called for in claims 1 and 16.

Dean teaches an electrical heating apparatus for reducing or preventing ice formation on aircraft parts. The apparatus comprises a metallic conducting grounded layer 12 adhered to the aircraft part, either in the form of a sheet or sheets of metal foil or a sprayed or painted layer, an insulating layer 13 applied to the metallic layer 12, a metallic layer 14 forming an electrical resistance heating element applied to the outer surface of the insulating layer 13, a further layer of insulating material 15 applied to

the outer surface of the metallic layer 14, and a layer 16 of anti-static, erosion-inhibiting semi-conducting paint applied to the outer surface of the insulating layer 15. Dean, col. 1, l. 68 to col. 2, l. 21. The layer 14 is divided into a plurality of strips separated from one another and connected electrically in series or in parallel as an assembly 17 of electrical resistance elements to form an electrical path therethrough and is supplied with electrical power by an alternator 18. Dean, col. 2, ll. 26-36. When assembly 17 is supplied with power from the alternator 18, the resistance elements heat up the surface of the aircraft part to reduce or prevent ice formation. Dean, col. 2, l. 65 to col. 3, l. 2. If an electrical fault condition occurs, such as a breakdown of the insulating layer 13, thereby providing a conducting path between the electrical resistance element and the metallic layer 12, a signal will be induced in a coil 20 and a breaker will be tripped to cut off the supply of power to assembly 17, to reduce fire hazard. Dean, col. 3, ll. 2-18. If the aircraft part has an outer skin formed of a metallic material, Dean teaches that a metallic layer 12 is not necessary. Dean, col. 3, ll. 22-24.

The Examiner determined it would have been obvious to use an ice protection system as taught by Dean comprising metal wire mesh and the sound attenuation panel of Hom or Mnich to protect the aircraft from ice. Final Rejection 2. Appellants argued that such combination would not have been obvious, because there is no teaching or suggestion that the multi-layered, insulated structure of Dean could successfully be employed in combination with the perforated structure of Hom or Mnich. Appeal Br. 8.

On the basis of our findings above, Appellants' position is well taken. Specifically, we find that the sound attenuation panels of Hom and Mnich rely on a perforated or porous outer sheet to provide continuous

communication between the honeycomb core cells and the atmosphere adjacent to the noise to be attenuated. Accordingly, affixing a solid, imperforate structure as taught by Dean to the perforated or porous sheet of the sound attenuation panel of either Hom or Mnich would render the sound attenuation panel unsuitable for its intended purpose, and thus would not have been obvious. *See Tec Air Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (Where the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, the proposed modification would not have been obvious.) The Examiner's proposal to provide the ice protection system as a metal wire mesh is unsound for two reasons. First, there is no teaching in the applied references to do so. Rejections based on 35 U.S.C. § 103 must rest on a factual basis. In making such a rejection, the examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). Second, even if the conducting layer were made of a metal wire mesh, Dean's heating apparatus further utilizes multiple layers of insulation and adhesive, and a metallic grounded layer, which would block the perforations of the sound attenuation panel outer sheet, thus rendering the sound attenuation panel unsuitable for its intended purpose. As pointed out by Appellants (Appeal Br. 8), Dean's heating apparatus would not operate as intended if any of those layers were perforated to provide continuous communication between the honeycomb core cells and the atmosphere adjacent to the noise to be attenuated. In light of the above, we agree with Appellants that the combination of the heating

apparatus of Dean with the sound attenuation panel of either Hom or Mnich in a manner to arrive at the subject matter of claims 1 and 16 would not have been obvious.

The Examiner has not relied on Kugelman or Volkner for any teaching that would cure the deficiency in the basic combination of Hom or Mnich and Dean.

## CONCLUSION OF LAW

Appellants have demonstrated the Examiner erred in determining it would have been obvious to combine the electrical heating apparatus of Dean with the sound attenuation structure of Hom or Mnich in a manner to arrive at the subject matter of Appellants' independent claims 1 and 16. Appellants thus have demonstrated error in the Examiner's rejection of claims 1 and 16, and dependent claims 2-9, as being unpatentable over either Hom or Mnich in combination with Dean. Appellants have likewise demonstrated error in the Examiner's rejection of claims 10-13 as being unpatentable over either Hom or Mnich in combination with Dean and either Kugelman or Volkner.

## DECISION

The Examiner's decision is:

REVERSED

JRG

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